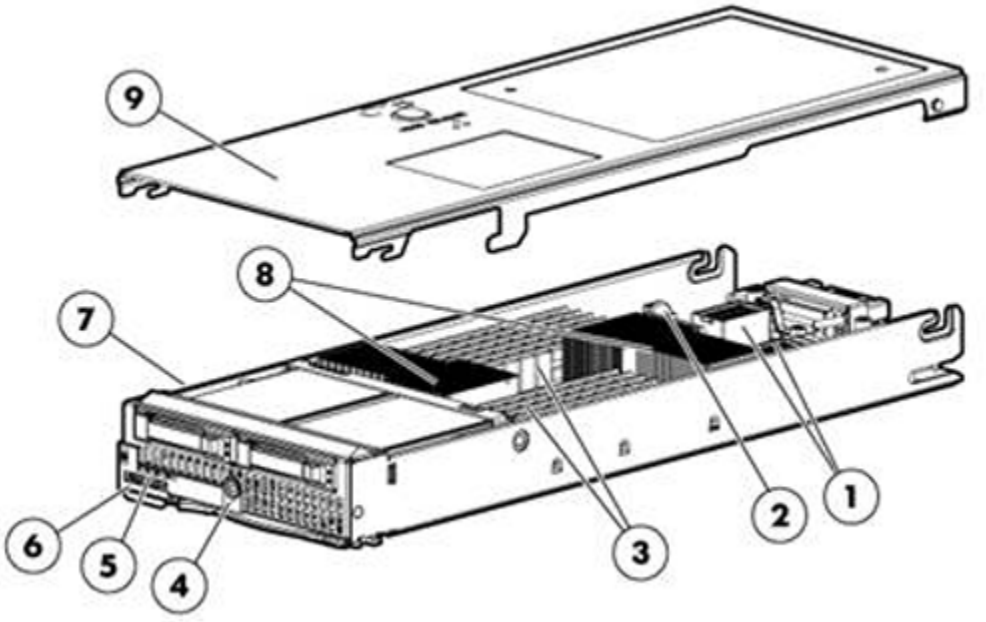
Overview



HP ProLiant BL460c G7 Server Blade

1. Two (2) mezzanine I/O expansion slots
2. Internal USB connector
3. Twelve (12) DDR3 Registered or Unbuffered DIMM Memory Slots
4. HP Smart Array P410i Controller (under drive bays)
5. Two (2) small form factor (SFF) hot-plug drive bays
6. Local I/O Connector
7. Internal SD card slot
8. Up to two (2) Intel® Xeon® 5500 or 5600 series processors
9. Access Panel

At A Glance

This document covers the HP ProLiant BL460c G7 server blade only. For more information on HP BladeSystems c-Class Infrastructure and HP BladeSystem c-Class Interconnect Components, please see the following QuickSpecs:

HP BladeSystem c-Class Enclosures QuickSpecs:
HP BladeSystem c3000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html

HP BladeSystem c7000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html

HP BladeSystem c-Class Interconnect Components QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12524_div/12524_div.html

The HP ProLiant BL460c G7 provides greater 2P x86 server blade density without compromise and maximum power-efficiency with flexibility and choice.

HP ProLiant BL460c G7 server blade includes:

- **Processor**:
  - Up to two (2) Intel® Xeon® 5500 or 5600 Series processors
  - Intel® 5520 Chipset

Overview

- **Memory**:
  - Twelve (12) DIMM slots
  - Up to 192GB, using PC3-8500 DDR3 Registered (RDIMM) memory, operating at 800MHz when fully populated at 2 DIMMs per Channel in 12 slots
  - Up to 48GB, using PC3-10600 DDR3 Unbuffered (UDIMM) memory, operating at 1333MHz when fully populated at 2 DIMMs per Channel in 12 slots
- **Storage Controller**:
  - HP Smart Array P410i Controller (RAID 0/1)
- **Internal Drive Support**:
  - Up to two (2) small form factor (SFF) SAS or SATA hot plug hard disk drives or SATA solid state drives
- **Network Controller**:
  - Integrated NC553i Dual Port FlexFabric 10Gb Converged Network Adapter supporting stateless TCP/IP offload, TCP Offload Engine (TOE), Fibre Channel over Ethernet (FCoE) and iSCSI protocols
    NOTE: Fibre Channel over Ethernet (FCoE) capability requires the use of an HP Virtual Connect FlexFabric 10Gb/24-port Module. Learn more at: www.hp.com/go/virtualconnect.
    NOTE: Each port is autosensing 1 Gb / 10 Gb, and can interoperate with 1 Gb HP BladeSystem c-Class interconnect components. Both ports will operate at the same speed.
  - One (1) additional 10/100 server adapter dedicated to iLO 3 Management
- **Mezzanine Support**:
  - Two (2) I/O expansion mezzanine slots
  - Supports up to two (2) mezzanine cards
    - Dual-Port Fibre Channel Mezzanine (4-Gb or 8-Gb) options for SAN connectivity
    - Ethernet server adapter mezzanine options for additional network ports
    - InfiniBand (IB) Mezzanine options for low latency and high bandwidth server interconnectivity
    - I/O Accelerator mezzanine options for high transaction rate local storage
- **Ports**:
  - One (1) internal USB 2.0 connector for security key devices and USB drive keys
  - One (1) internal SD-HC Card slot
- **Security - Trusted Platform Module**:
  - One (1) internal TPM 1.2 module connector
- **Form Factor**:
  - HP ProLiant BL460c G7 is a half-height server blade that plugs into the HP BladeSystem c3000 and c7000 enclosures
- **Infrastructure Management**:
  - HP Integrated Lights-Out 3 (iLO 3) management processor for simplified server setup, health monitoring and recovery, power and thermal control, and lights-out remote administration.
  - HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, control and optimize your IT infrastructure through a single, simple management console. Insight Control supports both Windows and Linux-based central management servers.
  - HP Insight Dynamics for ProLiant, a product option, is an integrated command center that enables IT Staff personnel to continuously analyze and optimize a converged infrastructure, while automating and reducing the cost of common data center tasks by as much as 40 percent. This ultimately enables them to dynamically keep pace with the organization's changing business requirements.
- **Operating Systems and Virtualization Software**:
  - Supports Windows, RHEL, SLES, OEL, VMware ESX, and Citrix XenServer
- **Enclosures**:
  - HP offers three different c-Class server blade enclosures to meet your individual needs:
    - The HP BladeSystem c7000 rack enclosure is 10U high and holds up to sixteen (16) ProLiant BL460c G7 servers plugged vertically.
    - The HP BladeSystem c3000 rack enclosure is 6U high and holds up to eight (8) HP ProLiant BL460c G7 servers plugged horizontally.
    - The HP BladeSystem c3000 tower enclosure is designed with casters for sites without racks and holds up to eight (8) HP ProLiant BL460c G7 servers plugged vertically.
  - Server blades, storage blades, interconnect modules, power supplies, fans, and redundant Onboard Administrator modules are all designed to fit into the c3000 and c7000 enclosures.
  - For additional enclosure information, please see: http://h18004.www1.hp.com/products/blades/components/enclosures/c-class/index.html.

Overview

- **Warranty**:
  - This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. Certain restrictions and exclusions apply. Hard drives have either a one year or three year warranty; refer to specific hard drive QuickSpecs for details.
    NOTE: Server warranty includes 3 year Parts, 3 year Labor, 3-year on-site support. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

Standard Features

Processor	**Six Core Processors** Intel® Xeon® Processor X5670 (2.93 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Intel® Xeon® Processor X5660 (2.80 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Intel® Xeon® Processor X5650 (2.66 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Intel® Xeon® Processor L5640 (2.26 GHz, 12MB L3 Cache, 60W, DDR3-1333, HT, Turbo 2/2/3/3/4/4) **Four Core Processors** Intel® Xeon® Processor X5667 (3.06 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 1/1/2/2) Intel® Xeon® Processor L5630 (2.13 GHz, 12MB L3 Cache, 40W, DDR3-1066, HT, Turbo 1/1/2/2 Intel® Xeon® Processor E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) Intel® Xeon® Processor E5630 (2.53 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) Intel® Xeon® Processor E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) Intel® Xeon® Processor E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800) **Two Core Processors** Intel® Xeon® Processor E5503 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800) **NOTE:** HT indicates that the processor model supports Intel® Hyper-Threading Technology. **NOTE:** Turbo indicates the maximum potential frequency increment when using Intel® Turbo Boost Technology, with 4, 3, 2, and 1 cores active (on Four Core processors) or with 6, 5, 4, 3, 2, and 1 cores active (on Six Core processors). **NOTE:** DDR3 speed is the maximum memory speed of the processor. Actual memory speed may depend on the quantity and type of DIMMs installed. **NOTE:** For the Intel 5500 and 5600 Series, the letter preceding the model number indicates the performance/wattage of the processor. "X" denotes High Performance/Wattage; "E" denotes Enterprise Performance/Wattage (Mainstream); and "L" denotes Lower Wattage.
Upgradeability	Upgradeable to two (2) processors
Cache Memory	4MB shared L3 cache 12MB shared L3 cache
Chipset	Intel® 5520 Chipset

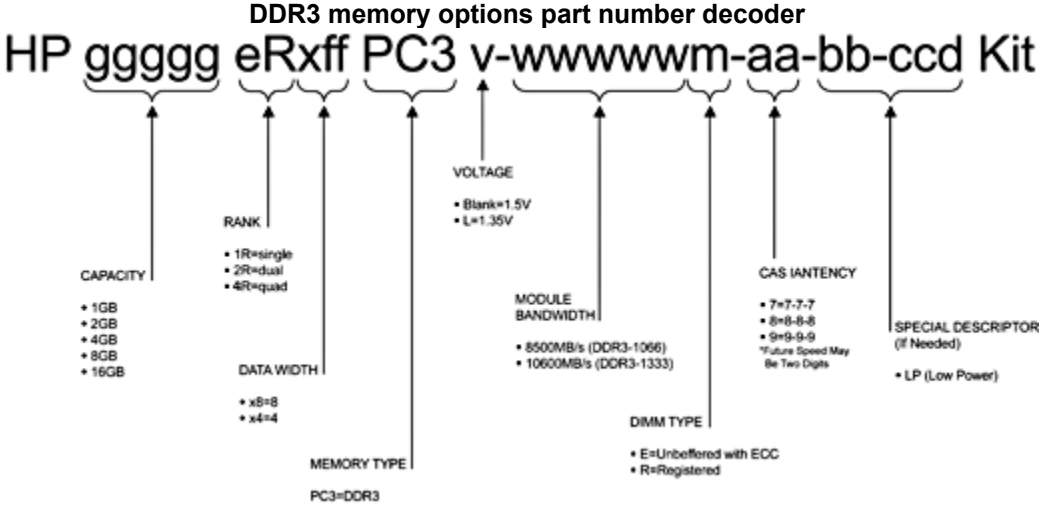
Standard Features

Memory

Type	DDR3 Registered (RDIMM) or Unbuffered (UDIMM)
Standard	6 GB (3 x 2GB) RDIMM
Maximum(RDIMM)	192GB (12 x 16 GB) for Registered Memory configurations
Maximum (UDIMM)	48 GB (12 x 4 GB) for Unbuffered Memory configurations

NOTE: A minimum of 2GB of memory must be installed.
NOTE: Depending on the memory configuration and processor model the memory speed may run at 1333MHz, 1066MHz or 800MHz. Please see the Online Memory Configuration Tool for details: www.hp.com/go/ddr3memory-configurator

DDR3 memory options part number decoder



Network Controller

Integrated NC553i Dual Port FlexFabric 10GbE Converged Network Adapter
NOTE: FlexFabric capability requires the use of an HP Virtual Connect Flex-Fabric module. Learn more at: www.hp.com/go/virtualconnect.
One (1) additional 10/100 NIC dedicated to iLO 3 Management

I/O Expansion Slots

Two (2) I/O expansion mezzanine slots (x8 PCI Express)

Integrated Manageability

HP Integrated Lights-Out 3 (iLO 3) management processor

Storage Controller

Type HP Smart Array P410i Controller (RAID 0/1) with no cache
Available Options: 256MB cache, Battery-Backed Write Cache (BBWC) module for 256MB cache, 512MB cache with Battery Backed Write Cache (BBWC), 1G and 512MB Flash Backed Write Cache (FBWC), and Smart Array Advanced Pack.
NOTE: Supports two (2) Small Form Factor (SFF) Hot Plug drive bays.

Maximum Internal Storage

Hot Plug SAS	1.0TB	2 x 500GB Serial SCSI
Hot Plug SATA	1TB	2 x 500GB Serial ATA
Hot Plug SATA SSD	240GB	2 x 120GB Serial ATA SSD

Graphics

Integrated Matrox G200

Standard Features

Graphics Resolution Supported	Resolution Color Depths	1600 x 1200, 64K, 256, 16 1280 x 1024, 16.7M, 64k, 256, 16 1024 x 768, 16.7M, 64k, 256,16 800 x 600, 16.7M, 64k, 256, 16 640 x 480, 16.7M, 64k, 256, 16 **NOTE:** Maximum resolution available via HP Integrated Lights-Out 3 (iLO 3) remote console is 1280 x 1024.

Fibre Channel Support

Two (2) optional Fibre Channel HBAs are supported by the HP ProLiant BL460c G7. Both mezzanine circuit boards connect directly to the server blade system board. These Fibre Channel HBAs are available via option kits and must be ordered separately.

HBA mezzanine card option kits:

Emulex LPe1105-HP 4Gb FC HBA (403621-B21)

- Based on the same field-proven ASIC, firmware, and driver technology as Emulex's renowned LPe1150 HBA, the Emulex LPe1105-HP is fully driver compatible with all Emulex HBAs

Emulex LPe 1205-HP 8Gb FC HBA (456972-B21)

- Exceptional performance, enhanced security, and scalable management for virtual server and enterprise-class applications

QLogic QMH2462 4Gb FC HBA (403619-B21)

- Uses common drivers which means that customers can standardize on one QLogic driver whether they are using the QMH2462 or other HBAs powered by QLogic

QLogic QMH2562 8Gb FC HBA (451871-B21)

- Provides a first step into the 8Gb future, advanced, embedded support for virtualized environments and reduced power consumption

Brocade 804 8Gb FC HBA for HP BladeSystem c-Class (590647-B21)

- Application oriented Quality of Service (AQoS) providing the ability to configure, prioritize, and optimize traffic flows from virtual machines and/or applications to the target port

Brocade, Emulex and QLogic Fibre Channel HBAs for HP BladeSystem c-Class feature:

- Optimal performance utilizing PCI Express
- 4/2/1Gb/s auto negotiating speeds (4Gb HBAs)
- 8/4/2Gb/s auto negotiation speeds (8Gb HBAs)
- Dual-ports for redundant path connections
- Up to two FC HBAs per server blade providing redundant FC HBA support
- Optimized for HP StorageWorks and supported by third party SAN vendors
- Support for Microsoft® Windows® and Linux operating system environments

Compatible SAN

HP ProLiant BL460c G7 server blades are optimized for HP StorageWorks MSA, EVA and XP.

HP ProLiant BL460c G7 server blades are compatible with select 3rd party SANs (please see blade storage page for more details: http://h18004.www1.hp.com/products/blades/components/c-class-sans.html

Standard Features

HP Virtual Connect		HP Virtual Connect is an interconnect option for BladeSystem c-Class that simplifies server connectivity to data and storage networks, and reduces costs. Unique HP Flex-10 and FlexFabric technologies make maximum use of network bandwidths, provide dynamic tuning and enable extreme flexibility to meet individual server and infrastructure requirements. HP Virtual Connect Enterprise Manager (VCEM) provides a central console to administer network connections and workloads for thousands of servers. For more information on Virtual Connect Ethernet, Fibre Channel, Converged Network and management options see: www.hp.com/go/virtualconnect
HP Insight management software	HP Insight Foundation	Managing the growing number of servers can be complex and expensive for your organization. IT managers need to address changing business needs with tools that meet the challenges of managing today's complex Datacenters. HP provides management solutions that are designed to simplify a server's installation, configuration and maintenance throughout the entire server lifecycle. This provides the customer with higher levels of operational efficiency and highly reliable systems: http://www.hp.com/go/foundation. The foundation pack includes: • HP SmartStart • HP Management • HP ProLiant Firmware Maintenance SmartStart version supported (minimum): SmartStart 8.50. http://www.hp.com/servers/smartstart
	HP Integrated Lights-Out (iLO)	HP Integrated Lights-Out (iLO) simplifies server setup, health monitoring, power and thermal control, and lights-out remote administration of ProLiant ML, DL, and BL servers. HP iLO functions without additional software and can be accessed from any location via a web browser. HP iLO works hand-in-hand with HP Systems Insight Manager, Insight Control suites, and Insight Dynamics for ProLiant, helping customers unleash the value of the ProLiant platform and deliver the highest possible quality of IT service. For more information, visit: www.hp.com/go/iLO
	HP Insight Control	HP Insight Control, a product option, delivers essential infrastructure management that can help save time and money by making it easy to deploy, migrate, monitor, remote control, and optimize your IT infrastructure through a single, simple management console. Two versions of Insight Control are available, to serve environments requiring either a Linux-based or a Windows-based central management server: HP Insight Control for Linux, and HP Insight Control. See www.hp.com/go/insightcontrol HP Insight Control includes one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. For more information about this service, please visit: http://www.hp.com/services/insight.
	HP Insight Dynamics for ProLiant	HP Insight Dynamics for ProLiant, a product option, is advanced infrastructure management software that enables IT staff to instantly adjust their environments to meet dynamic business demands by provisioning, optimizing and protecting complex infrastructure in minutes. It's a powerful toolkit, integrated-by-design, that accelerates complex technology projects and simplifies daily operations, transforming data center economics. With Insight Dynamics IT professionals can plan capacity and power continuously, balance

		workloads across physical and virtual resources, and ensure cost-effective high availability. It also enables IT organizations to provision infrastructure consistently and automatically from pools of shared resources using a self-service portal. Resources provisioned can range from a single virtual machine to complex multi-tier environments and their associated physical and virtual resource requirements. In addition to the previous functional benefits, it also provides a cost-effective disaster recovery for physical and virtual environments that works with HP StorageWorks Continuous Access software for both the Enterprise Virtual Array and the XP storage array allowing application environments to be reactivated in minutes with the touch of a button to a remote location. **NOTE:** For more information, visit: http://www.hp.com/go/insightdynamics
High Performance Clusters	HP Cluster Platforms	HP Cluster Platforms are specifically engineered, factory-integrated large-scale ProLiant clusters optimized for High Performance Computing, with a choice of servers, networks and software. Operating system options include specially priced offerings for Red Hat Enterprise Linux and Novell SLES, as well as Microsoft Windows HPC Server. A Cluster Platform Configurator simplifies ordering. http://www.hp.com/go/clusters
	HP HPC Interconnects	High Performance Computing (HPC) interconnect technologies are available for this server as part of the HP Cluster Platform portfolio. These high-speed InfiniBand and Gigabit interconnects are fully supported by HP when integrated within an HP cluster. Flexible, validated solutions can be defined with the help of configuration tools. http://www.hp.com/techservers/clusters/ucp/index.html
	HP Cluster Management Utility	HP Cluster Management Utility (CMU) is an HP-licensed and HP-supported suite of tools that are used to manage large-scale Linux ProLiant systems. CMU includes software for the centralized provisioning, management and monitoring of nodes. CMU makes the administration of clusters user friendly, efficient, and effective. http://www.hp.com/go/cmu
	HP HPC Linux Value Pack	HP HPC Linux Value Pack (Value Pack) is an HP-licensed and HP-supported specially priced software bundle for the development and deployment of applications on HPC Cluster Platforms. Value Pack includes the Platform LSF workload scheduler, the HP-MPI parallelization library, the HP Unified Parallel C compiler and the HP Shmem library, as well as the execution environments for the libraries and compiler. HP HPC Linux Value Pack
Operating Systems and Virtualization Software Support for ProLiant Servers	Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Oracle Enterprise Linux (OEL) VMware Citrix XenServer	**NOTE:** For more information on HP's Certified and Supported ProLiant Servers for OS and Virtualization Software and latest listing of software drivers available for your server, please visit our Support Matrix at: http://www.hp.com/go/ossupport and our driver download page http://www.hp.com/support/BL460cG7

Standard Features

Availability

- Dual-Port Fibre Channel Mezzanine Card options for redundant SAN connection
- Dual-port embedded 10 Gigabit Ethernet adapters for redundant LAN connections
- Two (2) hot-plug SAS/SATA hard drive bays and integrated RAID (HP Smart Array P410i Controller)
- Optional Battery-backed and Flash-backed write cache module for integrated RAID controller
- Redundant ROM
- Advanced ECC Memory
- Support for Memory Mirroring and Memory Lock-Step Mode
- Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)

Industry Standard Compliance

ACPI 2.0 Compliant
PCI 2.2 Compliant
WOL Support
Microsoft® Logo certifications
USB 2.0 Support
IMPI 2.0 Compliant
SMASH CLP Compliant

Security

- Power-on password
- Administrator's password
- Integrated Lights-Out 3 has 12 customizable user accounts and SSL encryption

Security - Trusted Platform Module

The TPM (Trusted Platform Module) is a microcontroller chip that can securely store artifacts used to authenticate the server platform. These artifacts can include passwords, certificates and encryption keys. Windows® BitLocker™ Drive Encryption (BitLocker) is a data protection feature available in Windows Server® 2008. BitLocker leverages the enhanced security capabilities of a Trusted Platform Module (TPM) version 1.2. The TPM works with BitLocker to help protect user data and to ensure that a server running Windows Server 2008 has not been tampered with while the system was offline.

NOTE: For more information about TPM, including a white paper, go to: http://www.hp.com/go/TPM
NOTE: ProLiant OS pre-installed units will come with the partition required for TPM deployment.
NOTE: The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services on your specific server model please contact your sales representative or go to: http://www.hp.com/go/factory-express.html

Standard Features

HP Enterprise Configurator	The HP e-Configure Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance. http://www.hp.com/products/configurator

Service and Support

For increased uptime, productivity and ROI - HP Care Pack packaged services for Servers
These days, you need to get the most out of your server investment - you can't afford not to. When you buy HP server products and solutions, it's also a good time to think about what levels of service and support you may need. To help take the worry out of deploying, designing, maintaining, and managing your environment, we've designed a portfolio of service options that are as: flexible, reliable and scalable as your server. Unlike server-only vendors, we take a holistic approach to your entire environment, bridging storage, servers, blades, software and network infrastructures with our HP Care Pack packaged services for Servers.

Protect your business beyond the warranty
When it comes to robustness and reliability, standard warranties on today's computing equipment have matured just as the technologies have matured. Good news on some fronts - but also a source of potential problems and subsequent consequences that come from depending on standard warranties alone. Standard warranty protects against product defects and some causes of downtime - but not the business. By using a standard approach to warranty uplifts, such as HP Care Pack Services, you can reduce downtime risks and be more certain of operational consistency for both mission-critical and standard business computing. Simply put, HP Care Pack Services normalize the warranty of combined products - helping you proactively guard against unplanned downtime.

Extending warranties with HP Care Pack Services
For cost-effective upgrading or extending your standard warranty, HP Care Pack Services offer a suite of standard reactive hardware and software support services that are sold separately, or combined as with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition, with HP Proactive Select we offer an innovative approach to service delivery that gives you the flexibility to acquire the specific proactive services you need today, then add services as your needs evolve. HP Proactive Select offers a broad set of technical or per-event type service options - including server, storage, and network, SAN device, and software, environment, installation and education services. Services that you can mix and match depending on your specific requirements, from preliminary planning and equipment delivery to installation, configuration, integration, and testing, through every level of ongoing support. Our HP Care Pack packaged services for Servers assures help when you need it most. And for many products, post-warranty HP Care Pack Services are available when your original warranty has expired.

HP Server Services: Offering reliability, flexibility and value - just like your storage
HP Server Services offers a full spectrum of customer care, from technology support to complex migrations to complete completely managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education offers flexible, comprehensive training on server networking and server software to help your IT staff get the most out of your investments. And HP Financial solutions extend innovative financing and asset management programs to cost-effective buy, manage and eventually retire your older equipment.

HP Server Services, the trusted business technology experts who manage your technology in action, because when technology works, business works. http://www.hp.com/services/servers, http://www.hp.com/services/storage

HP Care Pack Services are sold by HP and HP Authorized Service Partners:

- Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.
- Customers purchasing from a commercial reseller can find HP Care Pack Services at: http://www.hp.com/go/lookuptool

NOTE: Care Pack Services availability may vary by product and country.

Recommended HP Care Pack Services for optimal satisfaction with your HP product

Recommended Services

3-Year HP Hardware Support Onsite Call-to-Repair (CTR) Service - 24-hour CTR

This cost-effective service helps you minimize system downtime due to hardware failure. It features a commitment to resolve hardware problems within 24 hours from the time your service call is received.
When you experience system problems, your call is immediately connected to an HP-certified resolution engineer for troubleshooting. If your problem cannot be resolved remotely, an experienced support professional is dispatched to your site to begin hardware repair activities.

HP is committed to repairing your hardware within a maximum of 24 hours. The benefits include:

- Improved system uptime
- Predictable repair times
- More effective IT resource planning
- Consistent level of hardware support across your multi-technology systems

http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6636ENN

3-Year HP Hardware Support Onsite Call-to-Repair (CTR) Service - 6-hour CTR

This cost-effective service helps you minimize system downtime due to hardware failure. It features a commitment to resolve hardware problems within 24 hours from the time your service call is received.
When you experience system problems, your call is immediately connected to an HP-certified resolution engineer for troubleshooting. If your problem cannot be resolved remotely, an experienced support professional is dispatched to your site to begin hardware repair activities.

HP is committed to repairing your hardware within a maximum of 6 hours. The benefits include:

- Improved system uptime
- Predictable repair times
- More effective IT resource planning
- Consistent level of hardware support across your multi-technology systems

http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6636ENN

HP Installation and Startup of HP ProLiant Servers

HP Installation and Startup of HP ProLiant Servers provides for the installation of your new HP ProLiant server and operating system. This will assist you in bringing your new HP ProLiant server and operating system into operation in a timely and professional manner.

This service provides a trained HP service specialist to perform an installation that meets HP quality standards, for:

- Delivery of the service at a mutually scheduled time convenient to your organization
- Availability of an HP service specialist to answer basic questions during the onsite delivery of this service
- Custom installation as detailed in "Delivery specifications" or in a Statement of Work (SOW)
- Verification prior to installation that all service prerequisites are met

http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-7572ENN

Optional HP Care Pack Services that will enhance your HP product experience

Optional Services

3-Year HP Hardware Support Onsite Service, 4-hour response, 24x7

As an alternative to our recommended support level, for customers who need same day response server level 24x7.

3-Year, 24x7 Same-Business Day, 4-Hour response coverage provides high-quality remote assistance and onsite support for your covered hardware, helping you to improve product uptime. You have the flexibility to choose between different service-level options featuring different response times and coverage windows, as well as between several coverage periods to address your specific service needs.

Service benefits:

- Help improve or maintain system uptime
- Convenient onsite support
- Reliable response times
- Remote problem diagnosis and support
- Onsite hardware support
- Materials included
- Service-level options with different coverage windows and response times
- Work to completion
- Escalation management
- Access to electronic support information and services
- HP electronic remote monitoring and support solution (for eligible products only)
- Optional Defective media Retention Service

http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE

3-Year HP Software Support 24x7

As an alternative to our recommended support level, for customers who need access to software updates and responsive 24x7 software support:

HP Software Support provides comprehensive software support for HP and select third-party software. With HP Software Support, your IT staff has fast, reliable access to HP response Centers. HP Response Venter engineers work with your IT team to provide advice on software features and use, problem diagnosis and resolution, software defect identification and access to patches.

Support benefits:

- Problem resolution - Gain access to expert technical resources
- Access - Use online around-the-clock support case submission, patch downloads and knowledge base search
- Stability - Increase system performance and reduce downtime due to software defects
- Predictability - Update HP and select third-party software at predictable costs
- Reduced TCO - Reduce the cost of purchasing individual software updates through substantial subscription savings
- Communication - Notify system managers when new software versions are made available

http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6645EEE

3-Year HP Proactive 24

As an alternative to our recommended support level, for customers who want enhanced operational effectiveness and proactive problem identification.

HP Proactive 24 Service (P24) integrates hardware and software support to help you to improve the stability and operational effectiveness of your IT environment. An HP Account Manager acts as your primary point of contact to ensure that HP meets your support needs effectively.

P24 provides the maximum value when multiple technologies in the environment (e.g. servers, storage, SAN and the network), are all covered. It provides an environment-wide view and consistent support of all of these components which affect stability of your key applications.

Choose P24 when you want to:

- Enhance operational effectiveness with proactive problem identification and recommendations from HP
- Partner with technical experts who help coordinate support, provide hands-on assistance, and share knowledge with your staff
- Rapidly access support and expertise spanning your environment
- Obtain personalized services tailored to your business environment and critical success factors
- Anticipate necessary change - and execute it correctly the first time
- Efficiently manage infrastructure resources to meet your performance objectives

http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA0-1614ENUC

eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

Support Portal
The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit: http://www.hp.com/support

HP Insight Remote Support software delivers secure remote support for your HP Servers and Storage, 24 X 7, so you can spend less time solving problems and more time focused on your business. You can have your systems remotely monitored for hardware failure using secure technology that's been proven at thousands of companies around the world. In many cases, you can avoid problems before they occur.

Customer Technical Training

HP Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction. For a list of all our awards, please visit: http://h20219.www2.hp.com/services/cache/433028-0-0-225-121.htm

Service and Support

HP Services Awards

HP Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction. For a list of all our awards, please visit: http://h20219.www2.hp.com/services/cache/433028-0-0-225-121.htm

Additional Services Information

For more information about HP Care Pack Services for Servers, please visit: http://www.hp.com/services/servers

To learn more on HP ProLiant servers and HP BladeSystem, please contact your HP sales representative or HP Authorized Channel Partner, or visit: www.hp.com/services/proliant or www.hp.com/services/bladesystem.

Models

NOTE: Not all models are available in all regions. Check with your local country HP offices for availability.

HP ProLiant BL460c G7 X5670 12G 1P Server 603251-B21 **HP ProLiant BL460c G7 X5650 6G 1P Server** 603259-xx1 **HP ProLiant BL460c G7 E5640 6G 1P Server** 603569-B21 **HP ProLiant BL460c G7 E5620 6G 1P Server** 603588-B21 **HP ProLiant BL460c G7 E5506 6G 1P Server** 603591-B21 **HP ProLiant BL460c G7 L5640 LV12G 1P Server** 603256-B21	**Processor(s)** One of the following depending on model	(1) Intel® Xeon® Processor X5670 (2.93 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) (1) Intel® Xeon® Processor X5650 (2.66 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) (1) Intel® Xeon® Processor E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) (1) Intel® Xeon® Processor E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) (1) Intel® Xeon® Processor E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800) (1) Intel® Xeon® Processor L5640 (2.26 GHz, 12MB L3 Cache, 60W, DDR3-1333, HT, Turbo 2/2/3/3/4/4)
	Cache Memory	4MB or 12MB shared L3 cache
	Memory One of the following depending on model	12 GB (3 x 4 GB) PC3-10600 (DDR3-1333) Registered DIMMs 6 GB (3 x 2 GB) PC3-10600 (DDR3-1333) Registered DIMMs 12GB (3 x 4 GB) PC3L-10600 (DDR3-1333) Low Voltage Registered DIMMs
	Network Adapter	Embedded NC553i Dual Port FlexFabric 10GbE Converged Network Adapter and one (1) additional 10/100 server adapter dedicated to iLO 3 Management
	Storage Controller	HP Smart Array P410i Controller (RAID 0/1)
	Hard Drives	None ship standard
	Internal Storage	Two Hot Plug SFF Drive Bays
	Optical Drive	None
	Form Factor	Up to eight (8) half-height blades supported in the HP BladeSystem c3000 Enclosure Up to sixteen (16) half-height blades supported in HP BladeSystem c7000 Enclosure

Country Code	xx = B2	Worldwide
	xx = 20	Brazil

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on CTO product offerings and requirements.
NOTE: HP does not allow factory integration of options into standard models listed above. Configure-to-order server blades must start with a CTO Blade.
NOTE: FIO indicates that this option is a Factory Installable Option.

Step 1: Base Server Blade Configuration (Select a configurable Blade)

Models	HP BL460c G7 CTO Blade	603718-B21
	Configurable Model ships with:	
	Integrated NC553i Dual Port FlexFabric 10Gb Converged Network Adapter and one (1) additional 10/100 server adapter dedicated to iLO 3 management	
	Smart Array P410i Controller with no cache	
	Integrated Lights-Out 3 Standard Blade Edition	

Step 2: Choose Required Options (one of the following from each list unless otherwise noted)

HP Processors	**For single processor configuration choose:**	
	Six Core Processor Option Kits **NOTE:** If two processors are desired, select one xxxxxx-L21 and one xxxxxx-B21.	
	HP BL460c G7 X5670 (2.93 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) FIO Kit	610859-L21
	HP BL460c G7 X5660 (2.80 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) FIO Kit	603254-L21
	HP BL460c G7 X5650 (2.66 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) FIO Kit	610860-L21
	HP BL460c G7 L5640 (2.26 GHz, 12MB L3 Cache, 60W, DDR3-1333, HT, Turbo 2/2/3/3/4/4 FIO Kit	610863-L21
	Four Core Processor Option Kits	
	HP BL460c G7 X5667 (3.06 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 1/1/2/2) FIO Kit	626902-L21
	HP BL460c G7 L5630 (2.13 GHz, 12MB L3 Cache, 40W, DDR3-1066, HT, Turbo 1/1/2/2) FIO Kit	603574-L21
	HP BL460c G7 E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) FIO Kit	610861-L21
	HP BL460c G7 E5630 (2.53 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) FIO Kit	610862-L21
	HP BL460c G7 E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) FIO Kit	612127-L21
	HP BL460c G7 E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800) FIO Kit	610864-L21
	Two Core Processor Option Kits	
	HP BL460c G7 E5503 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800) FIO Kit	612890-L21
HP Memory	**Registered DIMMS (RDIMMs)**	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500658-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	593339-B21

HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit	604504-B21
HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit	604506-B21
HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
Unbuffered with ECC DIMMs (UDIMMs)	
HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500668-B21
HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500670-B21
HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500672-B21
NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.	
NOTE: PC3L is low voltage memory.	

Step 3: Choose Additional Options for Factory Integration

NOTE: For additional options, please refer to the "Core Options" and "Additional Options" section below. For additional options, including server blade enclosures interconnect options and power subsystem options; please see the Core Options and Additional sections below; or the following QuickSpecs:
HP BladeSystem c-Class Enclosures QuickSpecs:
HP BladeSystem c3000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html
HP BladeSystem c7000 Enclosure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html
and HP BladeSystem c-Class Interconnect Components QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12524_div/12524_div.html.

Core Options

HP Ethernet Mezzanine Options	**Gigabit Ethernet Mezzanines**	
	HP NC325m PCI Express Quad Port 1Gb Server Adapter for c-Class BladeSystem **NOTE:** If the NC325m is installed in mezzanine slot 1 of a half-height server, connectivity will be provided on 2 of the 4 ports.	416585-B21
	HP NC364m Quad Port 1GbE BL-c Adapter **NOTE:** If the NC364m is installed in mezzanine slot 1 of a half-height server, connectivity will be provided on only 2 of the 4 ports.	447883-B21
	HP NC382m Dual Port 1GbE Multifunction BL-c Adapter	453246-B21
	HP BLc QLogic iSCSI Dual Port Adapter	488074-B22
	NOTE: The Gigabit Ethernet adapters above transmit from the server at 2000 Mbps, full duplex per port only. For more information, see the "Network Controller" segment in the Standards Features section.	
	10 Gigabit Ethernet Mezzanines	
	HP NC522m Dual Port 10GbE Multifunction BL-c Adapter **NOTE:** The NC522m network adapter card is required for each server blade connecting to a 10Gb interconnect in bays 3-8 (HP BladeSystem c7000 Enclosure) or bays 3-4 (HP BladeSystem c3000 Enclosure). **NOTE:** The NC522m requires a minimum of 2 GB of server memory. **NOTE:** The NC522m supports linking at 1000Mbps or 10000Mbps when not connected to a Flex-10 enabled module and will link with all current 1Gb switches at 1Gb.	467801-B21
	HP NC532m Dual Port 10GbE BL-c Adapter **NOTE:** The NC532m network adapter card is required for each server blade connecting to a 10Gb interconnect in bays 3-8 (HP BladeSystem c7000 Enclosure) or bays 3-4 (HP BladeSystem c3000 Enclosure). **NOTE:** The NC532m requires a minimum of 2 GB of server memory. **NOTE:** The NC532m supports linking at 1000Mbps or 10000Mbps when not connected to a Flex-10 enabled module and will link with all current 1Gb switches at 1Gb.	467799-B21
	HP NC542m Dual Port Flex-10 10GbE Multifunction BL-c Adapter **NOTE:** The NC542m network adapter card is required for each server blade connecting to a 10Gb interconnect in bays 3-8 (HP BladeSystem c7000 Enclosure) or bays 3-4 (HP BladeSystem c3000 Enclosure) **NOTE:** The NC542m requires a minimum of 2 GB of server memory. **NOTE:** The NC542m supports linking at 1000Mbps or 10000Mbps when not connected to a Flex-10 device. The NC542m will only support 1000Mbps when connected to a 1Gb Ethernet interconnect.	539857-B21
	HP NC550m 10GbE 2-port PCIe x8 Flex-10 Ethernet Adapter **NOTE:** The NC550m network adapter card is required for each server blade connecting to a 10Gb interconnect in bays 3-8 (HP BladeSystem c7000 Enclosure) or bays 3-4 (HP BladeSystem c3000 Enclosure) **NOTE:** The NC550m requires a minimum of 2 GB of server memory. **NOTE:** The NC550m supports linking at 1000Mbps or 10000Mbps when not connected to a Flex-10 device. The NC550m will only support 1000Mbps when connected to a 1Gb Ethernet interconnect.	581204-B21

Core Options

HP Fiber Channel Mezzanine Options	Brocade 804 8Gb FC HBA for HP BladeSystem c-Class	590647-B21
	HP BLc Emulex LPe1205- 8Gb FC HBA for HP c-Class BladeSystem	456972-B21
	Emulex LPe1105 FC Dual Channel 4Gb, PCI-E-to-Fibre Channel Host Bus Adapter	403621-B21
	QLogic QMH2562 8Gb FC HBA for HP c-Class BladeSystem	451871-B21
	QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem	403619-B21
HP Processors	**Six Core Processor Option Kits**	
	HP BL460c G7 X5670 (2.93 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Kit	610859-B21
	HP BL460c G7 X5660 (2.80 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Kit	603254-B21
	HP BL460c G7 X5650 (2.66 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 2/2/2/2/3/3) Kit	610860-B21
	HP BL460c G7 L5640 (2.26 GHz, 12MB L3 Cache, 60W, DDR3-1333, HT, Turbo 2/2/3/3/4/4 Kit	610863-B21
	Four Core Processor Option Kits	
	HP BL460c G7 X5667 (3.06 GHz, 12MB L3 Cache, 95W, DDR3-1333, HT, Turbo 1/1/2/2) Kit	626902-B21
	HP BL460c G7 L5630 (2.13 GHz, 12MB L3 Cache, 40W, DDR3-1066, HT, Turbo 1/1/2/2) Kit	603574-B21
	HP BL460c G7 E5640 (2.66 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) Kit	610861-B21
	HP BL460c G7 E5630 (2.53 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) Kit	610862-B21
	HP BL460c G7 E5620 (2.40 GHz, 12MB L3 Cache, 80W, DDR3-1066, HT, Turbo 1/1/2/2) Kit	612127-B21
	HP BL460c G7 E5506 (2.13 GHz, 4MB L3 Cache, 80W, DDR3-800) Kit	610864-B21
	Two Core Processor Option Kits	
	HP BL460c G7 E5503 (2.00 GHz, 4MB L3 Cache, 80W, DDR3-800) Kit	612890-B21
HP Memory	**Registered DIMMS (RDIMMs)**	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500658-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	593339-B21
	HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit	604504-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit	604506-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	Unbuffered with ECC DIMMs (UDIMMs)	
	HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500668-B21

Core Options

	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500670-B21
	HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500672-B21
	NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.	
	NOTE: Kits described as LP include Low Power DIMMs. For more information on ProLiant Energy Efficient Features, see: http://h18004.www1.hp.com/products/servers/platforms/energyefficient/	
	NOTE: PC3L is a low voltage memory.	
HP Hard Drives	**NOTE:** The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.	
	NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.	
	SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives	
	HP 300GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507127-B21
	HP 146GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512547-B21
	HP 146GB 6G SAS 10K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	507125-B21
	HP 72GB 6G SAS 15K rpm SFF (2.5-inch) Dual Port Enterprise 3yr Warranty Hard Drive	512545-B21
	SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
	HP 500GB 6G SAS 7.2K rpm SFF (2.5-inch) Dual Port Midline 1yr Warranty Hard Drive	507610-B21
	NOTE: Please see QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12244_div/12244_div.html (Worldwide)	
	NOTE: The hard drive options are not required when configuring a Drive-less Model.	
	SATA Hot Plug SFF (2.5-inch) Midline (MDL) Drives	
	HP 500GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive	507750-B21
	HP 160GB 3G SATA 7.2K rpm SFF (2.5-inch) Midline 1yr Warranty Hard Drive	530888-B21
	SATA Hot Plug SFF (2.5-inch) Entry (ETY) Drives	
	HP 250GB 3G SATA 5.4K rpm SFF (2.5-inch) Entry 1yr Warranty Hard Drive	460355-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13021_div/13021_div.html (Worldwide)	
	SATA Hot Plug SFF Midline Solid State Drives	
	HP 60GB 3G SATA SFF (2.5-inch) Midline 1yr Warranty Solid State Drive	572071-B21
	HP 120GB 3G SATA SFF (2.5-inch) Midline 1yr Warranty Solid State Drive	572073-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13121_div/13121_div.html	

Additional Options

HP Insight software	**HP Insight Control**	
	HP Insight Control, No Media, Electronic License including 1 year of 24x7 Technical Support and Updates	T9074BAE
	HP Insight Control, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates	452148-B22
	HP Insight Software Media Kit **NOTE:** Insight Software DVD media without licenses. Contains Insight Control, Insight Dynamics and Virtual Connect Enterprise Manager. Uses an integrated installer to perform quick and accurate software installation and updates.	436222-B21
	NOTE: Licenses ship without media. The HP Insight Control Media Kit can be ordered separately, or can be downloaded at: http://www.hp.com/go/insightupdates. **NOTE:** Electronic licenses can be used to purchase multiple licenses with a single activation key, and is available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent. **NOTE:** Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support & Update Service. **NOTE:** For additional license kits, including bundles with HP BladeSystem enclosures, please see the Insight Control QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12631_div/12631_div.html	
	HP Insight Control for Linux	
	HP Insight Control for Linux, 1-server license, including one year of 24x7 Technical Support and Updates, Electronic **NOTE:** This part number can be purchased as a single license or as multiple licenses with a single activation key. Customer will receive a license entitlement certificate via e-mail. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. **NOTE:** Electronic LTUs are only available through limited points of sales; if not available, order a printed license entitlement certificate instead.	TC213AAE
	HP Insight Control for Linux, No Media, 1-Server license, including one year of 24x7 Technical Support and Updates	TC209A
	HP Insight Control for Linux, Media pack (DVD) - No licenses included **NOTE:** This optional Media pack DVD contains the ISO image for HP Insight Control for Linux, HP Systems Insight Manager, HP Insight Control power management, HP Insight Control virtual machine management, and an integrated installer. Servers must be acquired separately. **NOTE:** This Media pack is optional because the latest ISO image and latest updates may be downloaded at no cost from: http://www.hp.com/go/ic-linux (click on Download button).	TC208A
	NOTE: Licenses ship without media. The Media Kit for Insight Control for Linux can be ordered separately, or can be downloaded at: http://www.hp.com/go/ic-linux (click on Download button). **NOTE:** Electronic licenses can be used to purchase multiple licenses with a single activation key, and are available in all countries except China and Japan. Customers in China and Japan should order the physical equivalent. **NOTE:** Customer will receive a license entitlement certificate, which must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service. **NOTE:** For additional License Kits, including electronic licensing options, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html	

Additional Options

High Performance Clusters	**HP Cluster Management Utility**	
	HP Cluster Management Utility Compute Node Flexible License **NOTE:** This part number can be used to purchase one certificate for multiple licenses with a single activation key. Each license is for one node (server). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key.	436284-B21
	HP Cluster Management Utility License and Media **NOTE:** Order a minimum of one license per cluster to purchase media including software and documentation, which will be delivered to the customer, and also licenses CMU management. No license key is delivered or required.	433257-B21
	NOTE: For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/12612_div/12612_div.html	
	HP HPC Linux Value Pack	
	HP High Performance Computing Linux Value Pack 1 Processor Flexible License **NOTE:** This part number can be used to purchase one certificate for multiple licenses with a single activation key. Each license is for one socket (a.k.a. processor). Customer will receive a printed end user license agreement and license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online in order to obtain a license key.	TC293A
	HP High Performance Computing Linux Value Pack Media Kit **NOTE:** This part number can be used to purchase media including software and documentation, which will be delivered to the customer.	TC294A
	NOTE: For additional license kits please see the QuickSpecs at: http://h18004.www1.hp.com/products/quickspecs/13485_div/13485_div.html	
HP Security - TPM	HP Trusted Platform Module (TPM) Kit **NOTE:** The TPM key is unique to every TPM deployed server and must be retained. Misplacing or losing the key could result in data loss.	488069-B21
HP Storage Controllers	HP Smart Array P700M/512 Controller	508226-B21
	HP Smart Array P700M/256 Controller	507925-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13175_div/13175_div.html (Worldwide)	
	Optional Upgrades	
	HP Smart Array P-Series Low Profile Battery **NOTE:** The Smart Array Low Profile Battery supports the HP Smart Array P700m Controller. **NOTE:** The Smart Array battery option kit is required to enable battery-backed write cache (BBWC).	452348-B21
	NOTE: The options listed below supports the integrated HP Smart Array P410i.	
	HP 256MB P-series Cache Upgrade	462968-B21
	HP 650 mAh P-Series Battery **NOTE:** This kit is only for use with the 256 MB Cache Module. **NOTE:** This kit includes the cable required to attach battery to cache.	462969-B21
	HP 512MB P-Series Battery Backed Write Cache Upgrade **NOTE:** This kit includes the cable required to attach battery to cache.	462967-B21
	HP 512MB Flash Backed Write Cache	534916-B21
	HP 1G Flash Backed Write Cache	534562-B21

Additional Options

	HP Smart Array Advanced Pack No Media 1-Server license including 1yr 24x7 Technical Support **NOTE:** A license key, a minimum of 256MB cache, and battery kit is required to enable Smart Array Advanced Pack features. For more information go to: http://www.hp.com/go/saap **NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13201_div/13201_div.html (Worldwide)	516471-B21
HP I/O Expansion Options	HP StorageWorks 80GB IO Accelerator for BladeSystem c-Class	AJ876A
	HP StorageWorks 160GB IO Accelerator for BladeSystem c-Class	AJ877A
	HP StorageWorks 320GB IO Accelerator for BladeSystem c-Class	AJ878A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13220_div/13220_div.html	
HP c-Class Mezzanine Options	QLogic 4X QDR IB Dual Port Mezzanine HCA for HP BladeSystem c-Class	583210-B21
	HP 4X DDR IB Dual Port Mezzanine HCA for HP BladeSystem c-Class	448262-B21
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12586_div/12586_div.html	
HP Ultrium Tape Blades	HP StorageWorks SB1760c Tape Blade **NOTE:** LTO-4 Ultrium tape technology.	AQ697A
	HP StorageWorks SB920c Tape Blade **NOTE:** LTO-3 Ultrium technology.	AJ401A
	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12729_div/12729_div.html	
HP StorageWorks SB40c Storage Blade	HP StorageWorks SB40c Storage Blade **NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12587_div/12587_div.html (Worldwide)	411243-B21
HP Expansion Blade	HP PCI Expansion Blade **NOTE:** Ships with one pre-installed PCI-X connect board. Also includes one PCIe connect board which requires installation. **NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12753_div/12753_div.html	448018-B21

Additional Options

HP USB and SD Options	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
	HP USB Standard Keyboard	DT528A#ABA
	HP 2GB USB Flash Media Drive Key **NOTE:** HP qualified blank USB key for use with HP ProLiant servers that support the VMware virtualization environment and other HP value-add software like Smartstart. HP recommends this industry standard USB flash device for use with VMware ESXi. USB device must be installed in the internal slot of the ProLiant server for use with VMware ESXi. Refer to HP VMware Getting Started Guide for installation instructions.	608447-B21
	HP 4GB SD Flash Media **NOTE:** Blank SD media devices are supported for use with VMware and Citrix. SD media must be installed in the internal slot of the ProLiant server. Learn more at: http://www.hp.com/go/proliantvirtualization	580387-B21

HP Care Pack Services	**NOTE:** The HP Care Pack service part numbers below for ProLiant BL c-Class server blades, cover the server blade and all HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server.	
	Hardware Services On-site Service	
	4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	UK065E
	4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UK066E
	6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	UK067E

Memory

NOTE: Memory configurations listed do not apply to "Factory Integrated Models".

Memory Population Guidelines

For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator

Some DIMM installation guidelines are summarized below:

- For the HP ProLiant BL460c G7 server with twelve (12) memory slots:
  - There are three (3) channels per processor; six (6) channels per server
  - There are two (2) DIMM slots for each memory channel; twelve (12) total slots.
  - Memory channel 1 consists of the two (2) DIMMs that are closest to the processor
  - Memory channel 3 consists of the two (2) DIMMs that are furthest from the processor
- DIMM slots that are white should be populated first
- Do not mix Unbuffered memory (UDIMMs) with Registered memory (RDIMMs).
- Do not install DIMMs if the corresponding processor is not installed
- If only one processor is installed in a 2CPU system, only half of the DIMM slots are available
- To maximize performance, balance the total memory capacity between all installed processors
- It is not required, but it is recommended to load the channels similarly if possible
- Populate DIMMs from heaviest load (quad-rank) to lightest load (single-rank) within a channel
- Heaviest load (DIMM with most ranks) within a channel goes furthest from the processor
- For memory mirroring mode, channel 3 must be unpopulated. Channels 1 and 2 are populated identically
- For lock-step mode, channel 3 must be unpopulated. DIMMs in channels 1 and 2 will be installed in pairs. The paired slots will be 1,4; 2,5 on the BL460c G7
- Low Voltage DIMMs can only be used with Intel Xeon 5600 series processors.
- If mixing DIMM voltage is a requirement, please note that the DIMMs will run at 1.5V since all 1.35V are capable of supporting 1.5V operations

DIMM slot/capacity/populated speed table										
DIMM Type	**Registered DIMMS (RDIMMs)**							**Unbuffered with ECC DIMMs (UDIMMs)**		
DIMM Rank	**Single Rank (1R)**	**Dual Rank (2R)**				**Quad Rank (4R)**		**Single Rank (1R)**	**Dual Rank (2R)**	
DIMM Capacity	4GB	2GB	4GB	8GB	8GB	4GB	16GB	1GB	2GB	4GB
DIMM Native Speed (MHz)	1333	1333	1333	1066	1333	1066	1066	1333	1333	1333
DIMM Voltage	LV/Reg	Reg	Reg	Reg	LV/Reg	Reg	Reg	Reg	Reg	Reg
SLOTS THAT CAN BE POPULATED										
12 slot servers	12	12	12	12	12	12	12	12	12	12
MAXIMUM CAPACITY (GB)										
	48	24	48	96	96	48	192	12	24	48
POPULATED DIMM SPEED (MHz)										
1 DIMM Per Channel	1333	1333	1333	1066	1333	1066	1066	1333	1333	1333
2 DIMM Per Channel	1333	1333*	1333*	1066	1333*	800	800	1333*	1333*	1333*
* Supported at 1333 via setting in ROM based setup utility (RBSU).										

NOTES:

- PC3-10600 DIMMs have a maximum speed of 1333MHz. PC3-8500 DIMMs have a maximum speed of 1066MHz.
- Mixing DIMM speeds is allowed, but the system processor speed rules always override the DIMM capabilities
- If you do mix DIMM speeds, the memory bus will default to the minimum clock rate of all DIMMs in the system - even if the slower DIMM is on the other processor
- If you install 1x 1066MHz DIMM in channel 1 and 1x 1333MHz DIMM in channel 2, the maximum speed will be 1066MHz
- If you install 1x 1066MHz DIMM in channel 1 and 5x 1333MHz DIMMs with 1 DIMM Per Channel (DPC) in each of the

other channels, the maximum speed will be 1066MHz
- Maximum memory speed will also depend on the processor installed
- References to the above MHz speeds are for the various speeds of DDR3 DIMMs; 1333 refers to DDR3-1333, etc.

HP ProLiant BL460c G7 Server Blade DIMM slot and configuration diagrams

Basic memory slot and population diagram

- Population order; start with "A" first, "B" second, "C" third, etc.

12 DIMM SLOTS (6 per CPU node)					
	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	D	1	D	Chnl 1
	2	A	2	A	
Chnl 2	3	E	3	E	Chnl 2
	4	B	4	B	
Chnl 3	5	F	5	F	Chnl 3
	6	C	6	C	

HP ProLiant BL460c G7 Server Blade (1P Model)

Standard memory configuration (1 CPU model)

- 6GB (3 x 2GB) of PC3-10600 (DDR3-1333) RDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	D: empty	1	D: empty	Chnl 1
	2	A: 2GB DIMM	2	A: empty	
Chnl 2	3	E: empty	3	E: empty	Chnl 2
	4	B: 2GB DIMM	4	B: empty	
Chnl 3	5	F: empty	5	F: empty	Chnl 3
	6	C: 2GB DIMM	6	C: empty	

Standard Memory Plus Optional Memory (1 CPU model)

- 30 GB of PC3-10600 (DDR3-1333) RDIMMs (3 x 2GB plus 3 x 8GB)

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	D: 2GB DIMM	1	D: empty	Chnl 1
	2	A: 8GB DIMM	2	A: empty	
Chnl 2	3	E: 2GB DIMM	3	E: empty	Chnl 2
	4	B: 8GB DIMM	4	B: empty	
Chnl 3	5	F: 2GB DIMM	5	F: empty	Chnl 3
	6	C: 8GB DIMM	6	C: empty	

Memory

Standard Memory Replaced with Optional Memory (1 CPU model)

- 96GB of PC3-8500 Quad-Rank RDIMMs (6 x 16GB)

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	D: 16GB DIMM	1	D: empty	Chnl 1
	2	A: 16GB DIMM	2	A: empty	
Chnl 2	3	E: 16GB DIMM	3	E: empty	Chnl 2
	4	B: 16GB DIMM	4	B: empty	
Chnl 3	5	F: 16GB DIMM	5	F: empty	Chnl 3
	6	C: 16GB DIMM	6	C: empty	

UDIMM maximum configuration (1 CPU model)

- 24GB, consisting of six (6) 4GB dual-rank PC3-10600 UDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	D: 4GB DIMM	1	D: empty	Chnl 1
	2	A: 4GB DIMM	2	A: empty	
Chnl 2	3	E: 4GB DIMM	3	E: empty	Chnl 2
	4	B: 4GB DIMM	4	B: empty	
Chnl 3	5	F: 4GB DIMM	5	F: empty	Chnl 3
	6	C: 4GB DIMM	6	C: empty	

Standard Memory Replaced with Optional Memory (2 CPU Model)
RDIMM maximum configuration

- 192GB, consisting of twelve (12) 16GB quad-rank PC3-8500 RDIMMs

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	D: 16GB DIMM	1	D: 16GB DIMM	Chnl 1
	2	A: 16GB DIMM	2	A: 16GB DIMM	
Chnl 2	3	E: 16GB DIMM	3	E: 16GB DIMM	Chnl 2
	4	B: 16GB DIMM	4	B: 16GB DIMM	
Chnl 3	5	F: 16GB DIMM	5	F: 16GB DIMM	Chnl 3
	6	C: 16GB DIMM	6	C: 16GB DIMM	

UDIMM maximum configuration (2 CPU model)

- 48GB, consisting of twelve (12) 4GB dual-rank PC3-10600 UDIMMs

Memory

	CPU1		CPU2		
	slot #	population order	slot #	population order	
Chnl 1	1	D: 4GB DIMM	1	D: 4GB DIMM	Chnl 1
	2	A: 4GB DIMM	2	A: 4GB DIMM	
Chnl 2	3	E: 4GB DIMM	3	E: 4GB DIMM	Chnl 2
	4	B: 4GB DIMM	4	B: 4GB DIMM	
Chnl 3	5	F: 4GB DIMM	5	F: 4GB DIMM	Chnl 3
	6	C: 4GB DIMM	6	C: 4GB DIMM	

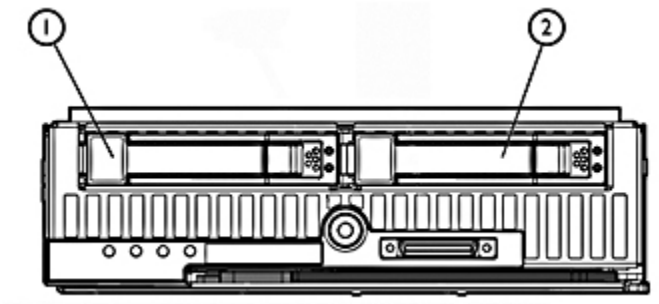
NOTE: Capacity references are rounded to the common Gigabyte values.

- 1GB = 1024MB
- 2GB = 2048MB
- 4GB = 4096MB
- 8GB = 8192MB
- 16GB = 16384MB

Following are memory options available from HP:

HP Memory	**Registered DIMMs (RDIMMs)**	
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500656-B21
	HP 4GB (1x4GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500658-B21
	HP 4GB (1x4GB) Single Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	593339-B21
	HP 4GB (1x4GB) Single Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit	604504-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3-10600 (DDR3-1333) Registered CAS-9 Memory Kit	500662-B21
	HP 8GB (1x8GB) Dual Rank x4 PC3L-10600 (DDR3-1333) Registered CAS-9 Low Power Memory Kit	604506-B21
	HP 16GB (1x16GB) Quad Rank x4 PC3-8500 (DDR3-1066) Registered CAS-7 Memory Kit	500666-B21
	Unbuffered with ECC DIMMs (UDIMMs)	
	HP 1GB (1x1GB) Single Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500668-B21
	HP 2GB (1x2GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500670-B21
	HP 4GB (1x4GB) Dual Rank x8 PC3-10600 (DDR3-1333) Unbuffered CAS-9 Memory Kit	500672-B21
	NOTE: All DDR3 memory option kits consist of one DIMM per kit. For detailed memory configuration rules and guidelines, please use the Online DDR3 Memory Configuration Tool: www.hp.com/go/ddr3memory-configurator.	
	NOTE: PC3L is a low voltage memory.	

Storage



1-2 2 x SFF SAS or SATA Hot Plug Hard Drives or SATA solid state drives

Hard Drives

NOTE: The components of a storage subsystem (e.g. the drive, the HBA/controller, firmware, and the server backplane) should operate at the same data transfer rate or the system bandwidth will be negotiated down to an acceptable level for all components.

NOTE: Hard drives have either a one year or three year warranty; refer to the specific hard drive QuickSpecs for details.

SAS Hot Plug SFF (2.5-inch) Enterprise (ENT) Drives

	Quantity Supported	Position Supported	Controller
300GB 6G SAS 10K 146GB 6G SAS 15K 146GB 6G SAS 10K 72GB 6G SAS 15K	2	1-2	HP Smart Array P410i Controller

SAS Hot Plug SFF (2.5-inch) Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
500GB 3G SATA 7.2K	2	1-2	HP Smart Array P410i Controller

SATA Non-Hot Plug SFF (2.5-inch) Midline (MDL) Drives

	Quantity Supported	Position Supported	Controller
500GB 3G SATA 7.2K 160GB 3G SATA 7.2K	2	1-2	HP Smart Array P410i Controller

SATA Hot Plug SFF (2.5-inch) Entry (ETY) Drives

	Quantity Supported	Position Supported	Controller
250GB 3G SATA 5.4K	2	1-2	HP Smart Array P410i Controller

SATA Hot Plug SFF Midline solid state drives

	Quantity Supported	Position Supported	Controller
60GB 3G SATA SSD 120GB 3G SATA SSD	2	1-2	HP Smart Array P410i Controller

Storage

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
XP Disk Array Systems	Please see the XP Disk Array Systems QuickSpecs below to determine configuration requirements	External	Please see the XP Disk Array Systems Quick Specs for the latest list of supported HBAs
HP StorageWorks XP10000 Disk Array: http://h18006.www1.hp.com/products/storageworks/xp10000/index.html (Worldwide)			
Enterprise Virtual Array Systems	Please see the XP Disk Array Systems QuickSpecs below to determine configuration requirements	External	Please see the XP Disk Array Systems Quick Specs for the latest list of supported HBAs
HP StorageWorks Enterprise Virtual Array Family: http://h18006.www1.hp.com/products/quickspecs/12408_div/12408_div.html (Worldwide)			

System Unit	**Dimensions** (H x W x D) (with bezel)	7.154 x 2.19 x 20.058 in (18.17 x 5.56 x 50.95 cm)	
	Weight (approximate)	Maximum (all hard drives and processors installed)	16.5 lb (7.5 kg)
		Minimum (one hard drive and processor installed)	11.50 lb (5.22 kg)
	Power Specifications	For power specifications including Input Requirements, BTU Rating, and Power Supply Output, please see the HP BladeSystem c-Class Enclosures QuickSpecs located at URL: HP BladeSystem c3000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html HP BladeSystem c7000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12810_div/12810_div.html To review typical system power ratings use the HP BladeSystem Power Sizer which is available via the online tool located at URL: http://www.hp.com/go/bladesystem/powercalculator	
	System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
		Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Acoustic Noise	For acoustic noise specifications, please see the HP BladeSystem c-Class Enclosures QuickSpecs located at URL: HP BladeSystem c3000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12790_div/12790_div.html HP BladeSystem c7000 Enclosure QuickSpecs: http://h18000.www1.hp.com/products/quickspecs/12810_div/	

12810_div.html

HP Smart Array P410i Controller	**Disk Drive Interface**	6Gb/s SAS (Serial Attached SCSI) 3Gb/s SATA (Serial ATA)
	Server Interface	x4 PCI Express host interface
	Cache Memory	0 MB (none) standard Optional 256MB, 512MB, or 1GBCache Memory
	Logical Drives Supported	2 (with standard 0MB cache)
	Maximum Logical Drive Capacity	32 (with optional 256MB cache) 64 (with optional 512MB cache)
	Host Memory Addressing	64-bit, supporting servers memory space greater than 4 GB
	RAID Support	RAID 1(Mirroring) RAID 0 (Striping)
	Upgradeable Firmware	Controller: Upgradeable Firmware with Recovery ROM feature Online Drive Flash (with SAS drives) requires 256MB, 512MB, or 1GB module

Embedded HP NC553i Dual Port FlexFabric 10Gb Converged Network Adapter	**Type**	Integrated dual-port KR 10Gb with FlexFabric (FCoE or iSCSI) capability
	Network Processor	ServerEngines BE3
	Data Transfer Method	x8 PCI Express 2.0
	Network Transfer Rate	Two ports, each at 20 Gbps full duplex; 40 Gbps aggregate full duplex theoretical bandwidth **NOTE:** Each port is autosensing 1 Gb / 10 Gb, and can interoperate with 1 Gb HP BladeSystem c-Class interconnect components. Both ports will operate at the same speed. **NOTE:** Each port on the NC553i adapter transmits from the server at only 20 Gbps (theoretical) full duplex.
	IEEE Compliance	802.1p QoS, 802.1Q VLAN tagging, 802.3ad link aggregation, 802.3ap 10GBase-KR, and 802.3x flow control
	Standard Features	• ProLiant Teaming including Network Fault Tolerance, Transmit Load Balancing, and Switch-Assisted Load Balancing • 9K Jumbo frames (4K Jumbo frames when in FCoE mode) • Microsoft Windows Receive Side Scaling (RSS) • Optional accelerated iSCSI

Technical Specifications

HP Integrated Lights-Out 3 (iLO 3) integrated on system board	**Architecture**	PCI Express based health and remote management ASIC
	Processor	PCI Express RISC processor core running at 250MHz
	Upgradeability	Option firmware upgradeable via Flash ROM
	Video Support	1600 x 1200 DVR max resolution
	Interfaces	One Ethernet Sideband connection (10/100/1000 Mb/s)
		One Ethernet network connection (10/100Mb/s)
	Memory	128-MB DDR with ECC
	Operating System Support	Microsoft Windows 2008 R2
		Microsoft Windows 2008 (32 bit and 64 bit)
		Microsoft Windows Server 2008 Standard Edition (32bit and 64bit)
		Microsoft Windows Server 2008 Enterprise Edition (32bit and 64bit)
		Microsoft Windows Server 2003 and Windows Server 2003 R2, and Windows Server 2003 for Extended Systems Standard Edition, Enterprise Edition
		Red Hat Enterprise Linux 5.4 (32 bit and 64 bit)
		SUSE LINUX Enterprise Server 11 (32bit and 64bit)
		SUSE LINUX Enterprise Server 10 (32bit and 64bit)
		VMware ESX 4.0
		VMware ESX 3.5.0
	Client System Support	Microsoft Windows 7
		Microsoft Windows XP Professional Edition
		Microsoft Windows Vista Business and Ultimate Editions
		Red Hat Enterprise Desktop 5.00
		SUSE Linux Enterprise Desktop 11
		SUSE Linux Enterprise Desktop 10
	Client Browser Support	Microsoft Internet Explorer 8
		Microsoft Internet Explorer 7
		Microsoft Internet Explorer 6
		Firefox 3.5 (on supported Windows and Linux systems)
		Firefox 3.0 (on supported Windows and Linux systems)
	Command Line Support	Secure Shell and serial port access
		Secure Socket Layer
		Secure Shell version 2
	Security	Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface
		AES encryption of video
		RC4 encryption of video
	Directory Support Services	Active Directory v1.0 (Windows 2003)
	Driver Support	HP ProLiant iLO3 Management Controller Driver Package
	Management protocols supported	SNMP, IPMI 2.0 (system and LAN interface), DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP), HP RIBCL XML

Environment-friendly Products and Approach	**End-of-life Management and Recycling**	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.